WHAT IS CLAIMED IS:

1. An optical module comprising a light input side, a light output side disposed to be separated by a free space from said input side, and an optically functional portion inserted between said input side and said output side so that said input side and said output side are optically coupled to each other through said optically functional portion, wherein:

at least one of said input side and said output side includes a plurality of collimators; and

at least one of said collimators is made different from the other collimators in at least one variable characteristic parameter selected from parameters such as a distance between a focal point of a lens and a light exit or incident surface, a numerical aperture of the light exit or incident surface, an effective focal length of the lens, a wavelength used and a distance between optical axes of adjacent ones of said collimators so that size and position of a beam waist on said input side are made approximately coincident with those on said output side.

2. An optical module according to Claim 1, wherein:

at least one of said input side and said output side includes a plurality of optical fiber collimators each constituted by a combination of a lens and an optical fiber; and

at least one of said fiber collimators is made different from the other fiber collimators in at least one variable characteristic parameter selected from parameters such as a

distance between a focal point of a lens and an end surface of the optical fiber, a mode field diameter or numerical aperture of the optical fiber, an effective focal length of the lens, a wavelength used and a distance between optical axes of adjacent ones of said fiber collimators so that size and position of a beam waist on said input side are made approximately coincident with those on said output side.

3. An optical module according to Claim 1, wherein:

said plurality of collimators disposed on at least one of said input side and said output side have a lens array constituted by a plurality of gradient index rod lenses; and

either or each of opposite end surfaces of said lens array is provided as an oblique surface with respect to a direction of arrangement of said array to thereby adjust said variable characteristic parameter.

4. An optical module according to Claim 2, wherein:

said plurality of fiber collimators disposed on at least one of said input side and said output side are constituted by a combination of a lens array of a plurality of gradient index rod lenses and a fiber array of a plurality of optical fibers; and

either or both of opposite end surfaces of said lens array and/or an end surface of said fiber array are provided as oblique surfaces with respect to a direction of arrangement of said array to thereby adjust said variable characteristic parameter.

5. An optical module according to any one of Claims 1 through 4, wherein longer wave is allocated to a channel longer in free space length.

6. An optical module according to any one of Claims 1 through 4, wherein:

said output side is disposed at an angle of 90 degrees with respect to said input side; and

a movable mirror is inserted in a position corresponding to each channel in said free space to thereby form a matrix optical switch.

7. An optical module according to Claim 6, wherein:

points of intersection between optical axes of said input side and optical axes of said output side are set to be equivalent to lattice points of a square lattice;

movable mirrors are disposed at said lattice points respectively; and

adjustment is made so that beam waists are formed on a diagonal line of said square lattice.

8. An optical module according to Claim 1 or 2, wherein an optical device constituted by either of a filter and a semi-transparent mirror is used as said optically functional portion, and adjustment is made in such a manner that beam waists as equal to one another as possible are formed on said optical device, so that an optical multiplexer/demultiplexer or an optical tap is formed.

9. An optical module according to Claim 2, wherein an optical fiber collimator with two fibers is disposed on one side whereas an optical fiber collimator with single fiber is disposed on an opposite side to said side so as to face the fiber collimator with two fibers, a filter is provided as said optical device in a free space formed between said collimators with single fiber and said collimators with two fibers, one of optical fibers in the fiber collimator with two fibers is provided as an input side whereas the other optical fiber is provided as an output side, an optical fiber in the collimator with single fiber is provided either as an input side or as an output side, and adjustment is made in such a manner that beam waists as equal to one another as possible are formed on a filter surface, so that an optical multiplexer or an optical demultiplexer is formed.

10. An optical module according to Claim 2, wherein a fiber collimator with two fibers is disposed on one side whereas a fiber collimator with single fiber is disposed on the opposite side so as to face the fiber collimator with two fibers, a semi-transparent mirror is provided as an optical device in a free space between the fiber collimator with two fibers and the fiber collimator with single fiber, one of optical fibers in the fiber collimator with two fibers is provided as an input side whereas the other optical fiber is provided as an output side, an optical fiber in the collimator with single fiber is provided as an output side, and adjustment is made in such a

manner that beam waists as equal to one another as possible are formed on said semi-transparent mirror, so that an optical tap is formed.

11. An optical module according to Claim 9 or 10, wherein longer wave is allocated to channels larger in free space length.

12. A wedge-shaped rod lens array comprising:

a plurality of gradient index rod lenses arrayed in at least one row, and each extending in parallel to an optical axis direction;

a frame supporting the gradient index rod lenses, and having a first end surface perpendicular to the optical axial direction, and a second end surface inclined with respect to the optical axial direction,

wherein an end surface of each said gradient index rod lens is flush with said second end surface of said frame.

13. A wedge-shaped rod lens array according to Claim 12, wherein an opposite end surface of each said gradient index rod lens is flush with the first end surface of said frame.

14. A wedge-shaped rod lens array according to Claim 12, further comprising:

a plurality of optical fibers supported by the frame, and respectively aligned with respect to said gradient index rod lenses,

wherein said optical fibers extends outwardly from said first end surface of said frame.